

Unit-V: Synchronous Sequential Logic & Programmable Logic Devices

Multiple Choice Questions (20)

1. A finite state machine (FSM) consists of:

- A) Inputs only
- B) Outputs only
- C) States, inputs, and outputs
- D) Memory only

Answer: C

2. In a Moore machine, the output depends on:

- A) Present input only
- B) Present state only
- C) Present state and present input
- D) Next state only

Answer: B

3. In a Mealy machine, the output depends on:

- A) Present state only
- B) Present input only
- C) Present state and present input
- D) Next state only

Answer: C

4. Compared to a Moore machine, a Mealy machine generally requires:

- A) More states
- B) Fewer states
- C) No states
- D) Equal states always

Answer: B

5. State diagrams are used to represent:

- A) Arithmetic circuits
- B) Sequential circuits
- C) Logic gates
- D) Number systems

Answer: B

6. State reduction is performed to:

- A) Increase memory
- B) Reduce the number of states
- C) Increase outputs
- D) Increase inputs

Answer: B

7. Which machine produces faster output?

- A) Moore Machine
- B) Mealy Machine
- C) ROM
- D) PLA

Answer: B

8. A sequence detector is an example of:

- A) Combinational circuit
- B) Sequential circuit
- C) Memory device
- D) Encoder

Answer: B

9. A traffic light controller is an application of:

- A) Decoder
- B) Finite State Machine
- C) Multiplexer
- D) Comparator

Answer: B

10. A vending machine is designed using:

- A) Sequential logic
- B) Combinational logic only
- C) Decoder
- D) Encoder

Answer: A

11. RAM stands for:

- A) Random Access Memory
- B) Read Access Memory
- C) Rapid Access Memory
- D) Register Access Memory

Answer: A

12. ROM stands for:

- A) Read Only Memory
- B) Random Output Memory
- C) Register Only Memory
- D) Read Output Module

Answer: A

13. Which memory is volatile?

- A) ROM
- B) RAM
- C) PROM
- D) EPROM

Answer: B

14. Which memory retains data after power is switched OFF?

- A) RAM
- B) ROM
- C) Cache
- D) Register

Answer: B

15. PLA stands for:

- A) Programmable Logic Array
- B) Parallel Logic Array
- C) Programmable Linear Array
- D) Program Logic Assembly

Answer: A

16. PAL stands for:

- A) Programmable Array Logic
- B) Parallel Array Logic
- C) Programmable Access Logic
- D) Programmed Arithmetic Logic

Answer: A

17. Which programmable logic device has programmable AND and programmable OR arrays?

- A) PAL
- B) PLA
- C) ROM
- D) RAM

Answer: B

18. In PAL:

- A) Both AND and OR arrays are programmable
- B) Only AND array is programmable
- C) Only OR array is programmable
- D) Neither array is programmable

Answer: B

19. Which machine output changes only after a state transition?

- A) Mealy Machine
- B) Moore Machine
- C) PLA
- D) PAL

Answer: B

20. Which of the following is a programmable logic device?

- A) Decoder
- B) Multiplexer
- C) PLA
- D) Comparator

Answer: C

Unit-V: Fill in the Blanks (20)

1. A Moore machine's output depends only on the **present state**.
2. A Mealy machine's output depends on the **present state and present input**.
3. State diagrams represent **state transitions**.
4. State reduction minimizes the number of **states**.
5. A sequence detector is a **sequential** circuit.
6. A traffic light controller is an application of a **finite state machine**.
7. A vending machine is an example of a **sequential logic** application.
8. RAM stands for **Random Access Memory**.
9. ROM stands for **Read Only Memory**.
10. RAM is a **volatile** memory.
11. ROM is a **non-volatile** memory.
12. PLA stands for **Programmable Logic Array**.
13. PAL stands for **Programmable Array Logic**.
14. In a PLA, both **AND** and **OR** arrays are programmable.
15. In a PAL, only the **AND** array is programmable.
16. Moore machines generally require **more** states than Mealy machines.
17. Mealy machines usually respond **faster** than Moore machines.
18. State tables describe **present state, next state, and output**.
19. Programmable logic devices are used to implement **digital logic circuits**.
20. RAM, ROM, PLA, and PAL are examples of **memory and programmable logic devices**.